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Nearly allied to the preceding are the Centrolophinae, with the genera *Centrolophus* Lac., *Leirus* Lowe and *Palinurichthys* Gill, Blkr., (= *Pammelas* Gthr.) Closely connected to the Centrolophinae are the genera *Schedophilus* Cocco and *Hoplocoryphus* Gill, (type *Schedophilus maculatus* Gthr.)

Brama and *Taractes* appear to belong to a peculiar family.

Pteraclis Gronovius and *Pterocombus* Fries, the latter of which has been overlooked by Dr. Günther, seem to constitute a distinct group.

Diana Risso and *Luvarus* Raf. (= *Ausonia* Risso) probably also constitute a distinct family, as well as *Lampris* Retzius. Mene is more related to *Equula*.

Coryphæna is the type of a peculiar family early established. The genus *Lampugus* is probably, as Bonaparte and Günther have believed, identical with it. Valenciennes has announced* a discovery of M. Dussumier proving that the interparietal crest of the male is much more elevated than that of the female, while Dr. Günther considers the elevation of the crest as the accompaniment of mature age.

Several forms referred by Dr. Günther to his family of Carangidæ should be also withdrawn. They are *Pammelas* Gthr., which is nearly allied to *Centrolophus*, *Psettus* Com., *Platax* Cuv. et Val., *Zanclus* Com., *Capros* L., *Antigonia* Lowe, *Equula* Cuv. and *Gazza* Rüppell, as well as the group Kurtina.

Cupros and *Antigonia* form a family already established by Mr. Lowe; to it also belongs the genus *Hypsinotus* (Temm. et Schlegel), included by Günther in the group of Chætodontina and family of Chætodontidæ.

Equula and *Gazza* represent another peculiar family (Equuloidæ Blkr.); the *Equula longimanus* of Cantor, is the type of a distinct genus (*Clara* Gill), distinguished by the composition of the fins (D. X. 15. A. IV. 13), the large scales, entire preoperculum and long pectorals.

It is, perhaps, also somewhat doubtful whether *Psenes* (Cuv. et Val.) belongs to the Carangoids, but it would be premature to separate them until better known. The *Trachinotus anomalus* of Temminck and Schlegel referred to *Psenes* differs by the presence of seven branchiostegal rays and of only six dorsal spines; it may be called *Psenopsis anomalus*. The genus has a superficial resemblance to *Crius* or *Palinurichthys*.

Descriptions of new species of ALEPIDOSAUROIDÆ.

BY THEODORE GILL.

In this paper are described two new species of the family of Alepidosauroids, both of which are found in the waters of Western North America, and a third from the Carribean Sea is indicated. They all belong to that subgenus or genus whose members have a spine and twelve branched rays in each of the ventral fins, and of which the only other known species has been very recently described by M. Poey in his "Memorias Sobre la Historia Natural de la Isla de Cuba." The three species appear to agree in all other respects with *Alepidosaurus*, and have the same elevated dorsal fin.

The family of Alepidosauroidæ, including the species now described, appears to include seven species, but they require to be critically examined and re-described, as the descriptions hitherto published are not sufficiently characteristic to establish their distinction. Two (*Alepidosaurus ferox* Lowe and *A. azureus* Val.) are inhabitants of Madeira, while a third (*A. Richardsonii* Blkr.) is found at New Zealand.

The family of Alepidosauroids still appears to me to be more nearly allied to the Lepturoidæ than Siluroidæ, as has been urged by Mr. Lowe, with whom Sir John Richardson, and perhaps Parnell alone of all the native naturalists of Britain, can well contest the palm of excellence as a scientific

* Cuv. et Val. Hist. Nat. des Poissons, tome xxi. p. 8.

ichthyologist. On another occasion, I will give my reasons for the retention of this family near the Acanthopteri and against the supposed affinity of its members to either the Salmonoids to which Valenciennes has referred them, or the Siluroids, to which Günther has lately approximated them.

The species herein described, as well as the *Alepisaurus altivelis* of Poey, or those Alepidosauroids, whose ventrals have each a spine and twelve branched rays, may at least be placed in a separate subgenus, to which the name of CAULOPUS may be given. The number of ventral rays appear to be constant, and as there is rarely so wide an interval as that of between nine and thirteen in the same natural genus, its title to such distinction or even generic rank appears to be good.

ALEPIDOSAURUS (CAULOPUS) BOREALIS Gill.

The head has the form and outlines common to the other members of the tribe. The superior surface is flat and declines in a nearly uniform line to the snout, and is sculptured as usual. The height at the vertical of the preopercular margin enters nearly four times and a half (44-100) in the length; the width at the same region nearly equals a fourth (24-100) of the same; thence it regularly diminishes to the pointed snout.

The eyes are circular and normally large, a diameter entering eighteen-hundredths (18-100) times in the head's length. The distance of the eye from the snout equals two-fifths (40-100) of the length.

The nostrils are nearer to the eyes than to the snout, and are situated at the twenty-third-hundredth (23-100) of the length. The operculum is of a rhomboidal form; above it is straight, and its length exceeds a quarter of the head's; its longest diameter, from the centre of radiation to the postero-inferior angle margin, equals three-tenths of the same; its posterior margin is nearly vertical, or rather parallel with the preoperculum; the anterior curved upwards from the inferior. Its surface has about eighteen prominent striæ or ridges, besides additional smaller ones.

The coalescent inferior opercular bone is divided into two parts by an elevated stria or ridge, commencing above the articulation of the lower jaw; the part above that ridge is *vertically semi-hastiform*, or irregularly triangular, with an oblique emarginated base or posterior side; from its angle of radiation above the lower jaw, about nine striæ radiate; its least diameter, *from the apex to the base* or posterior oblique margin, equals an eleventh (9-100) of the head's length; its greatest, behind the preoperculum, exceeds twice the latter (19-100), while that of its posterior oblique side equals only about an eighth (12-100) of the head. The inferior portion, besides the upper dividing ridge, has one under it continued to the margin, and the whole surface has coarse radiating striæ or ridges, *the upper of which are interrupted behind by the anterior of two or three ridges parallel with the posterior border*.

The lower jaw is robust, and its length is equal to three-fourths of the head's. Its upper outline is slightly arched or convex. Its greatest height is under the last median trenchant small teeth of the sides, where it equals an eighth of the length of the head.

The teeth of the intermaxillary bones are very small, acute and numerous, and continued to the angle of the mouth. There are about three very large and nearly equal vomerine teeth, which are slender and considerably curved. The length of the hinder equals a seventh (15-100) of the head's length; one is unpaired, while the two behind are nearly opposite.

The large palatine teeth are shaped like the vomerine and equal in length nearly a tenth of the head's; there are in our specimen one on the left and two on the right side. The succeeding small trenchant teeth commence considerably behind, the first being scarcely before the anterior border of the orbit; they are not contiguous, and rapidly increase in size, are scarcely carinated, and the posterior border is slightly recurved. There are about six. The

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lower jaw has, *first*, in front, on each side, two small teeth, then behind a larger, slender, conical and recurved one. Each species has three on the right and four on the left, (*normally* ?); *thirdly*, about six small, slender, nearly straight ones; *fourthly*, three large, slender, compressed and curved trenchant ones, and *behind* ten or twelve small, trenchant ones. The large dentary teeth are slender and moderately curved; the length is four times greater than the height, and nearly equals a twelfth of the head's length. The posterior small trenchant teeth are separated by considerable intervals.

The dorsal fin has about thirty-four rays, the first of which is rather stout, and anteriorly has a prominent compressed ridge, crenulated in front; the distance between the first and second equals about three-fourths of that between the second and third.

The ventral fins are as long as the head, and each is composed of a slender spine, crenulated on its external edge, and of twelve rays divided nearly to the base; the external branches of the last are also more or less deeply divided.

Head—Length ($7\frac{1}{2}$ inches).....	100
Height at preoperculum.....	44
Width at preoperculum.....	24
Eye—Distance from snout.....	40
Diameter of eye.....	18
Nostril—Distance from snout.....	23
Lower jaw—Length.....	75
Greatest height.....	13
Intermaxillary bones—Length of posterior processes.....	15
Operculum—Length of upper margin.....	25
Greatest length.....	30
Height.....	26
Infraoperculum—Length.....	29
Length of shortest ray above the superior horizontal ridge.....	10
Teeth—Length of posterior vomerine tooth.....	15
Width “ “ “.....	3
Length of large posterior dentary tooth.....	8
Width “ “ “.....	2

This species is probably nearly allied to the *Alepidosaurus* (*Caulopus*) *altivelis* (Poey) of Cuba, but is distinguished by the *length of the ventral fins*, which appear to be at least equal to the head, and from others by the form and sculpture of the opercular pieces, as well as by the relative proportion and dimensions of the other parts of the head. A single specimen was obtained in Puget's Sound, by Dr. C. B. Kennerly, the Naturalist of the Northwestern Boundary Survey, under the command of A. Campbell, Commissioner. The head, dorsal, caudal and ventral fins were only preserved. The reflection will naturally arise, whether the individual captured there was not a wanderer from more southern waters. The discovery of a species of the family in such northern waters is a discovery of no slight interest.

A plate illustrative of the species will be published in the work on the Fishes of Western North America.

ALEPIDOSAURUS (CAULOPUS) SERRA Gill.

The head has the typical generic form, and constitutes about a sixth of the total length. The upper surface is flat, and declines in nearly a straight line to the snout. The height at the preopercular border equals two-fifths (40-100) of the length. Its width at the same place, or above the preoperculum, exceeds a fifth (22-100) of the same, or half of the height; thence, the width regularly decreases towards the pointed snout.

The eyes are of the usual size, the diameter entering about five and half 1862.]

times (18-100) in the head's length; they are nearly central, the distance from the snout exceeding the height, (two-fifths (43-100) of the length.)

The nostrils are within the posterior half of the interval between the snout and orbit. The operculum is oblong, and has a somewhat trapezoidal form; its superior margin advances obliquely upwards; its posterior subtruncated and nearly parallel with the preoperculum; its inferior nearly straight and parallel with the upper margin for half of the length of the operculum, and then curved upwards to the centre of radiation, or from the posterior inferior angle to the angle of radiation, it nearly describes the segment of a circle. Its length above nearly equals four-tenths (39-100), and its greatest exceeds three-tenths (33-100) of the head's length; its greatest height is less than a fifth (18-100). Its radiating striæ and ridges are moderately developed, most distinct and distant on the median and superior surface, and finest most approximated and curved beneath. There are about twenty-four, of which half terminate behind.

The coalescent inter- and subopercular bones are divided into two portions, an upper and lower; the upper is nearly equally *triangular*, with its apex above the articulation of the lower jaw, and its *base* *lunately emarginated* and below the operculum; it has from ten to fourteen radiating striæ or slight ridges; its least diameter, from the apex to the base, equals an eighth of the head's length; the sides nearly twice as much (23-100). The inferior portion is defined above by a straight ridge from the centre of radiation to the end, and scarcely passes beyond the operculum; its greatest length equals three-tenths of the head's; its surface above is *wrinkled parallel with the oblique posterior margin*, and has *slight radiating striæ on its lower half*.

The form of the lower jaw and the dentition offer important characters. The lower jaw forms three-quarters of the head's total length; its superior outline is nearly straight; its height is somewhat greatest under the second large tooth, but behind is subequal; its height there equals a tenth of the head's length.

The teeth of the intermaxillary bones are of normal size, very small, acute and numerous. The large vomerine teeth* are greatly developed and stout; the curve of the posterior is moderate. The length equals an eighth of the head's, and is three times longer than wide. The posterior or large palatine teeth behind have nearly straight posterior borders. The length nearly equals a twelfth of the head's or three-fourths of the palatine. The smaller teeth behind are contiguous at their bases, oblique, broad and with the posterior margin nearly straight or slightly convex near the base. Each has a median ridge on the surface, which is more distinct towards the tip. There are about nine such teeth.

The slender and elongated tooth of the front of each branch of the lower jaw is moderately curved; then follow about twelve slender conical ones; then three large dagger-shaped ones. The latter are robust; the posterior margin is at first straight and then slightly curved forwards to the tip; the posterior tooth has a length equalling half of the hinder vomerine ($6\frac{1}{2}$ -100), and its width at the base $2\frac{1}{2}$.

The posterior smaller teeth are broad and contiguous at their bases; the anterior border is curved very obliquely backwards, and the posterior is nearly straight. There are from thirteen to fifteen. Each one is carinated along the middle.

Of the dorsal fin, only the roots of the first few rays are not preserved, from which it appears that the first must have originated nearly over the postero-superior angle of the operculum; the ventrals have been also mostly destroyed, but enough is retained to show that there were the usual number of rays,—one spinous and twelve-branched.

* Only the two posterior ones are present in the specimen.

Head—Length (8 inches).....	100
Height at preoperculum.....	40
Width “ “.....	22
Eyes—Distance from snout.....	43
Diameter of eye.....	18
Lower jaw—Length.....	75
Greatest height.....	10
Intermaxillary bones—Length of posterior processes.....	12
Operculum—Length of upper margin.....	29
Greatest length.....	33
Height.....	18
Infraoperculum—Length.....	30
Length of shortest ray above the superior longitudinal ridge.....	12
Length of its angular processes about.....	22
Teeth—Length of posterior vomerine tooth.....	14½
Width “ “ “.....	3¼
Length of largest dentary tooth.....	9
Width “ “ “.....	3

The present species differs from the *Caulopus borealis* by the oblong operculum, the nearly equal triangular shape of the coalescent infraopercular bone above the dividing ridge, but with an oblique excavation at its base which describes nearly the third of a circle, as well as the sculpture of the portion below the dividing ridge. The vomerine teeth are stronger but less elongated, and the palatine approximated and not curved.

This fish was discovered at Monterey, Lower California, by Mr. A. S. Taylor, and the head as well as the caudal and ventral fins, all considerably mutilated and “sun-dried,” were preserved and forwarded to the Smithsonian Institution, in whose museum they are now contained. The notes of Mr. Taylor describe it as an “eel-like fish,” “shaped something like a Barracouta” (*Sphyræna*) and apparently “a female (?)” It was “caught near Monterey Rocks, 19 April, 1859.” Its weight was seven pounds; the length “from snout to end of tail four feet,” circumference round the belly seven inches; it had “simple viscera; the gall bladder, three inches long, was filled with transparent green gall; it had two simple straight guts; the female (?) organs of the roe (not impregnated) white and four inches long.” It was “evidently in very poor condition.”

The species is “called ‘serra,’ or saw fish, by the Lower Californians, but it is a very rare species.” The specific name given to it has the advantage of at the same time perpetuating the popular name and of being classical and describing one of the peculiarities of the palatine dentition, which distinguishes it from the *A. (C.) borealis*.

ALEPIDOSAURUS (CAULOPUS) POEYI Gill.

A species at least very nearly related to the *A. (C.) serra*, is found in the Caribbean Sea. It has been noticed in M. Poey’s “Conspectus Piscium Cubensium” as perhaps a new species, or, perhaps, the other sex (sp. nova? an *sexus alter?*) of his *Alepisaurus altivelis*. That professor has kindly sent to me outlines of both the *Alepisaurus altivelis* and the doubtful form, and I find that the dimensions of the latter and the present almost exactly agree in the height of the head, length of the snout, size of the eyes, and depth of the lower jaw. There appears, however, if full reliance is to be placed in the figure, to be some difference in the opercular bones, that portion of the coalescent, inferior, opercular piece, which is above the longitudinal dividing ridge, being much wider towards the upper angle of the preoperculum, and not deeply excavated on its oblique base, thus approaching the *A. (C.) borealis*; the operculum itself appears to be less long, its longest ray being little more than 1862.]

a third (31-100) of the head's length. The head itself is not so large, forming only a seventh of the total length. Finally, the first dorsal spine is represented as being nearly over the axilla of the pectoral fin. M. Poey distinguishes it further from his *A. altivelis* in his correspondence as follows :

"Le 337 diffère du 619 par 15 fois la hauteur dans la longueur totale, au lieu de 13. La tête 7 fois au lieu de 6½. De la base de la pectorale à la base de la ventrale, il y a la même distance que jusqu'à l'anale, moins ½, au lieu de moins ¼. Premier rayon-dorsal ½ de l'autre au lieu de ¼. Le 2e égal le 1er. Le 4e est le plus grand. Du 6e au 24 tous sont hauts, et égaux, au lieu que chez 619 le 2—22 sont hauts, égaux. D. 41. Lobe sup. caudal prolongé, lobes séparés, trois rayons au milieu. Vent. d'épissant l'anale et la hauteur du corps. Couleur de la dorsale uniforme. Je n'ai pas noté dans 619 que la 1er rayon fut raboteux, à la dorsale."

In honor of the gentleman who has thus distinguished the species, it may take the name of *ALEPIDOSAURUS* (*CAULOPUS*) *POEYI*.

On a new Species of *PRIACANTHUS* discovered in Narragansett Bay, R. I.

BY THEODORE GILL.

During a recent visit to Philadelphia, I discovered in the Museum of the Academy of Natural Sciences, a species of *Priacanthus*, which was at once discovered to be most nearly allied to a species of Japan. In the same bottle was a note confirming the label and giving the following information : "From Mr. Philip Caswell ; taken at Cananicut Ferry, Narragansett Bay, Sept., 1860. Color like Gold Fish." I am assured by Dr. Bridges, one of the principal ichthyologists of Philadelphia, that he is himself conversant with the circumstances of its discovery, and that there can be no doubt of the fact of its having been found in Rhode Island as well as *Sarothrodus maculo-cinctus* and *Hyporthodus flavicauda*, described in a previous number of these Proceedings, from the same State.

The species may be named

PRIACANTHUS ALTUS Gill.

The height of the body equals about a half of the total length, inclusive of the caudal fin. The head forms more than a third of the same. The diameter of the eye in the young specimens is contained 2½ times in the head's length. The posterior nasal aperture is a long curved slit. The angle of the preoperculum is armed with a strong spine passing beyond the branchial aperture. The caudal fin truncated ; the spines of the dorsal and anal fins longitudinally striated. The scales are proportionally large. The whole body is rough.

D. X. 11. A. III. 9—¹₁

The body appears to have been reddish or rose colored ; behind and at the pectoral region, the color is plumbeous, but perhaps accidentally so. The dorsal fin has its spinous portion punctulated with very numerous blackish dots, and with two rows of large roundish clear spots, besides a row of smaller basal ones and one of similar small spots near the margin ; the diameter of the large spots nearly equals the space between adjoining spines. The soft portion of the dorsal, as well as the anal and caudal fins, are more or less dotted with blackish ; the spinous portion of the anal also so thickly covered as to be blackish. The pectoral fins are entirely blackish, the dots being densely crowded.

The specimen is little more than an inch (1 1-5) in length.

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